

Machine Id

LIEBHERR LH-50 083207-1203

Swing Drive

## KLONDIKE FULL SYNTHETIC 75W90 (9 LTR)

RECOMMENDATION

We advise that you check for the source of water entry. The oil change at the time of sampling has been noted. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

**WEAR** 

All component wear rates are normal.

## CONTAMINATION

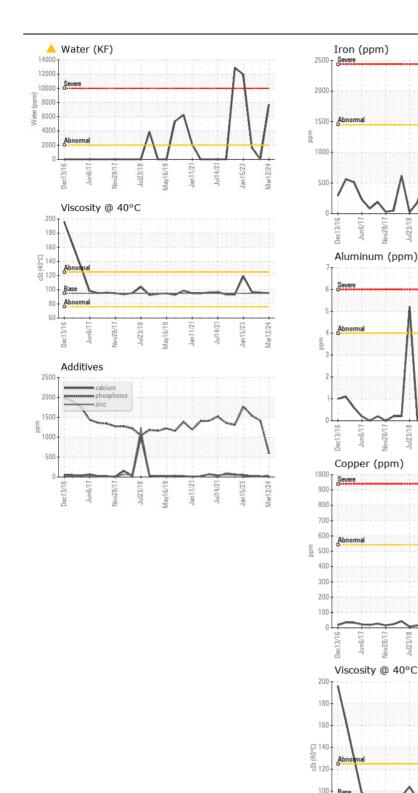
There is a moderate concentration of water present in the oil.

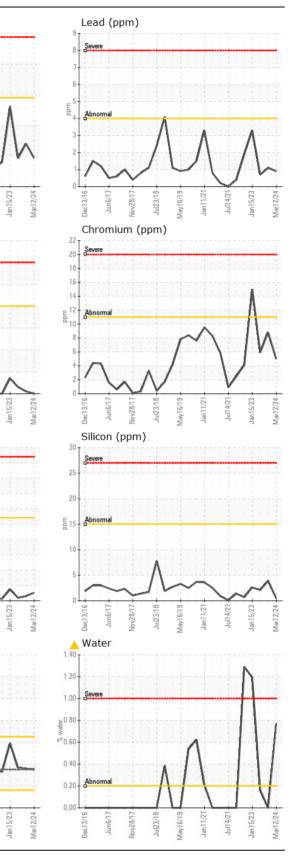
| <b>FLUID CONDITION</b> |  |
|------------------------|--|
|------------------------|--|

Additive levels indicate the addition of a different brand, or type of oil. The oil is no longer serviceable due to the presence of contaminants.

| Sample DateClient Info12 Mar 202408 Jul 202311 Apr 202Machine AgehrsClient Info199531826617583Oil AgehrsClient Info000Filter AgehrsClient InfoChangedChangedChangedOil ChangedClient InfoNAN/AN/AN/ASample StatusClient InfoNAN/AN/AN/ASample StatusStatusStatusABNORMALNORMALNORMALIronppmASTMD5185(m) >145046669994636NickelppmASTMD5185(m) >3<11<1<1<1TitaniumppmASTMD5185(m) >3<11<1<1<1CopperppmASTMD5185(m) >440<1<1<1<1CopperppmASTMD5185(m) >380000<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<   | 5W90 (9 L I      | <u>n)</u> |                     |           |             |             |             |
|--|------------------|-----------|---------------------|-----------|-------------|-------------|-------------|
| Sample DateClient InfoI2 Mar 20208 Jul 202311 Apr 202Machine AgehrsClient Info199531826617583Oil AgehrsClient Info000Filter AgehrsClient InfoChangedChangedChangedFilter ChangedClient InfoN/AN/AN/AN/ASample StatusClient InfoN/AN/AN/AN/AIronppmASTMD5180m>1450466699463ChoroniumppmASTMD5180m>3<1<1<1IronppmASTMD5180m>3<1<1<1SilverppmASTMD5180m0000AluminumppmASTMD5180m>4<11<1LeadppmASTMD5180m>4<11<1CopperppmASTMD5180m>38000VanadiumppmASTMD5180m>38000VanadiumppmASTMD5180m>542523019TinppmASTMD5180m>542523010Vellow MetalscalarVisual*NONENONENONESiliconppmASTMD5180m>54<142PotassiumppmASTMD5180m>1<11630ppm Water%ASTMD5180m>016303ppm Water%ASTMD5180m>0   | Test             | UOM       | Method              | Limit/Abn | Current     | History1    | History2    |
| Machine AgehrsClient Info199531826617583Oil AgehrsClient Info000Filter AgehrsClient InfoChangedChangedChangedOil ChangedClient InfoNAN/AN/AN/ASample StatusClient InfoNAN/AN/AN/AIronppmASTMD5185(m) >145046669994636ChromiumppmASTMD5185(m) >145966NickelppmASTMD5185(m) >145966NickelppmASTMD5185(m) >3<11<1<11TitaniumppmASTMD5185(m) >400000AluminumppmASTMD5185(m) >4000000AluminumppmASTMD5185(m) >4000000VanadiumppmASTMD5185(m) >40000000VanadiumppmASTMD5185(m) >4000   | Sample Number    |           | Client Info         |           | LH0281215   | LH0260590   | LH0213851   |
| Oil Age<br>Filter Age<br>IntsClient InfoOOOFilter Age<br>IntsClient InfoChangedChangedChangedChangedFilter ChangedClient InfoN/AN/AN/ASample StatusClient InfoN/AN/AN/AIronppmASTM D5185(m)>1450466699463ChromiumppmASTM D5185(m)>1596NickelppmASTM D5185(m)>3<1   | Sample Date      |           | Client Info         |           | 12 Mar 2024 | 08 Jul 2023 | 11 Apr 2023 |
| Filter AgehrsClient Info000Oil ChangedClient InfoKhangedChangedChangedChangedChangedFilter ChangedClient InfoN/AN/AN/AN/ASample StatusASTM D5185(m)>145046666999463ChromiumppmASTM D5185(m)>3<1  | Machine Age      | hrs       | Client Info         |           | 19953       | 18266       | 17583       |
| Oil ChangedClient InfoChangedChangedChangedChangedFilter ChangedClient InfoN/AN/AN/AN/AN/ASample StatusASTMD5185(m) >1450466069994636IronppmASTMD5185(m) >11509066NickelppmASTMD5185(m) >11509066NickelppmASTMD5185(m) >2441-111TitaniumppmASTMD5185(m) >40000AluminumppmASTMD5185(m) >44601-111CopperppmASTMD5185(m) >4452300191TinppmASTMD5185(m) >54252300191TinppmASTMD5185(m) >5425230000VanadiumppmASTMD5185(m) >15714420Yellow MetalscalarVisual*NONENONENONENONESiliconppmASTMD5185(m) >15<1421PotassiumppmASTMD5185(m) >2.0<1.7700.163ppm WaterppmASTMD5185(m) >1.2<1.0NONENONESiliconppmASTMD5185(m) >1.2<1.0NONENONESiliconppmASTMD5185(m) >2.2<1.0NONENONESiliconppmASTMD5185(m) >2.2<1.0NONENONESodiumppmASTMD518(  | Oil Age          | hrs       | Client Info         |           | 0           | 0           | 0           |
| Filter ChangedIClient InfoN/AN/AN/AN/ASample StatusASTM D5186(m) >1450ABNORMALNORMALNORMALNORMALIronppmASTM D5186(m) >1450466666994633ChromiumppmASTM D5186(m) >3<   | Filter Age       | hrs       | Client Info         |           | 0           | 0           | 0           |
| Sample StatusABNORMALNORMALNORMALIronppmASTM D5185(m)>14504666699463ChromiumppmASTM D5185(m)>1596NickelppmASTM D5185(m)>3<1<1<1TitaniumppmASTM D5185(m)>3<1000SilverppmASTM D5185(m)>40<1<1LeadppmASTM D5185(m)>4<11<1CopperppmASTM D5185(m)>42523019TinppmASTM D5185(m)>38000VanadiumppmASTM D5185(m)>38000White MetalscalarVisual*NONENONENONENONEYellow MetalscalarVisual*NONENONENONENONESiliconppmASTM D5185(m)>15<142PotassiumppmASTM D5185(m)>20<1<10Water%ASTM D5185(m)>20<1<10SilitscalarVisual*NONEMODERNONENONEDebrisscalarVisual*NOREMORMLNORMLNORMAppearancescalarVisual*NORENORMLNORMLNORMLAppearancescalarVisual*NORE<1<1<1BoronppmASTM D5185(m)<0<0<   | Oil Changed      |           | Client Info         |           | Changed     | Changed     | Changed     |
| Iron ppm ASTM DS185(m) >14.50 4666 6.699 4.63   Chromium ppm ASTM DS185(m) >11 5 9 6   Nickel ppm ASTM DS185(m) >3 <1 <1 <1   Titanium ppm ASTM DS185(m) >0 0 0 0   Silver ppm ASTM DS185(m) >4 0 <1 <1 <1   Lead ppm ASTM DS185(m) >4 <1 1 <1 <1   Lead ppm ASTM DS185(m) >4 <1 1 <1 <1   Copper ppm ASTM DS185(m) >38 0 0 0 0   Vanaduium ppm ASTM DS185(m) >38 0 0 0 0   Valow Metal scalar Visual* NONE NONE NONE NONE NONE   Vellow Metal scalar Visual* NONE NONE NONE <   | Filter Changed   |           | Client Info         |           | N/A         | N/A         | N/A         |
| Chromium ppm ASTM D5185(m) >11 5 9 6   Nickel ppm ASTM D5185(m) >3 <1 <1 <1   Titanium ppm ASTM D5185(m) >0 0 0 0   Silver ppm ASTM D5185(m) >4 0 <11 <11   Lead ppm ASTM D5185(m) >4 <10 <11 <11   Copper ppm ASTM D5185(m) >4 <11 <11 <11   Copper ppm ASTM D5185(m) >542 522 300 0 0   Vanadium ppm ASTM D5185(m) >38 0 0 0 0   Vanadium ppm ASTM D5185(m) >15 <1 4 2   Yellow Metal scalar Visual* NONE NONE NONE NONE   Silicon ppm ASTM D5185(m) >20 <1 <1 0 Visual*   Nore  | Sample Status    |           |                     |           | ABNORMAL    | NORMAL      | NORMAL      |
| Chromium ppm ASTM D5185(m) >11 5 9 6   Nickel ppm ASTM D5185(m) >3 <1 <1 <1   Titanium ppm ASTM D5185(m) >0 0 0 0   Silver ppm ASTM D5185(m) >4 0 <11 <11   Lead ppm ASTM D5185(m) >4 <10 <11 <11   Copper ppm ASTM D5185(m) >4 <11 <11 <11   Copper ppm ASTM D5185(m) >542 522 300 0 0   Vanadium ppm ASTM D5185(m) >38 0 0 0 0   Vanadium ppm ASTM D5185(m) >15 <1 4 2   Yellow Metal scalar Visual* NONE NONE NONE NONE   Silicon ppm ASTM D5185(m) >20 <1 <1 0 Visual*   Nore  | Iron             | mag       | ASTM D5185(m)       | >1450     | 466         | 699         | 463         |
| NickelppmASTM D5185(m)>3<1   | Chromium         |           |                     | >11       |             | 9           | 6           |
| Titanium ppm ASTM D5185(m) 0 0 0   Silver ppm ASTM D5185(m) >4 0 <1 <1   Lead ppm ASTM D5185(m) >4 1 <1 <1   Copper ppm ASTM D5185(m) >542 52 30 19   Tin ppm ASTM D5185(m) >542 52 30 0   Vanadium ppm ASTM D5185(m) >38 0 0 0   Vanadium ppm ASTM D5185(m) >38 0 0 0   Vanadium ppm ASTM D5185(m) >38 0 0 0   Vanadium ppm ASTM D5185(m) >15 <1 4 2   Vellow Metal scalar Visual* NONE NONE NONE NONE   Silicon ppm ASTM D5185(m) >15 <1 4 2   Potassium ppm ASTM D5185(m) >0.2 <10  | Nickel           |           | · /                 |           | <1          | <1          | <1          |
| SilverppmASTM D5185(m)000AluminumppmASTM D5185(m)>440<1  |                  |           |                     |           |             |             |             |
| Aluminum ppm ASTM D5185(m) >4 0 <1   |                  |           |                     |           | -           |             |             |
| Lead ppm ASTM D5185(m) >4 <1   |                  |           | ( )                 | >4        | -           |             |             |
| Copper ppm ASTM D5185(m) >542 52 30 19   Tin ppm ASTM D5185(m) >38 0 0 0   Vanadium ppm ASTM D5185(m) >38 0 0 0   White Metal scalar Visual* NONE NONE NONE NONE NONE   Yellow Metal scalar Visual* NONE NONE NONE NONE NONE   Silicon ppm ASTM D5185(m) >15 <1 4 2 0   Water % ASTM D5185(m) >20 <1 <1 0 0   Silit scalar Visual* NONE MODER NONE VILTE   Debris scalar Visual* NONE NORE NORE NORM   Appearance scalar Visual* NOR NORML NORML NORML   Boron ppm ASTM D5185(m) <0 0 0 0  |                  |           |                     |           |             |             |             |
| TinppmASTM D5185(m)>38000VanadiumppmASTM D5185(m)I0000White MetalscalarVisual*NONENONENONENONENONEYellow MetalscalarVisual*NONENONENONENONENONESiliconppmASTM D5185(m)>15<142PotassiumppmASTM D5185(m)>20<1<10Water%ASTM D5185(m)>20<10<1630.7ppm WaterppmASTM D6304*>200077061630.7SilitscalarVisual*NONEMODERNONEVLITEDebrisscalarVisual*NONEMODENONEVLITESand/DirtscalarVisual*NORENORMNORMNORMAppearancescalarVisual*NORHNORMLNORMNORMOdorscalarVisual*NORHNORMLNORMNORMGoronppmASTM D5185(m)<1<1<11BariumppmASTM D5185(m)<10<00MolybdenumppmASTM D5185(m)<11011CalciumppmASTM D5185(m)<1121519PhosphorusppmASTM D5185(m)<11111CalciumppmASTM D5185(m)<391416Phospho   |                  |           | ( )                 |           |             |             |             |
| VanadiumppmASTM D5185(m)0000White MetalscalarVisual*NONENONENONENONENONEYellow MetalscalarVisual*NONENONENONENONENONESiliconppmASTM D5185(m)>15<142PotassiumppmASTM D5185(m)>20<1<100Water%ASTM D6304*>0.2<0.7700.1630ppm WaterppmASTM D6304*>2000<77061630.7SiltscalarVisual*NONEMODERNONEVLITEDebrisscalarVisual*NONEMODERNONEVLITESand/DirtscalarVisual*NORENORMLNORMLNORMAppearancescalarVisual*NORENORMLNORMLNORMLOdorscalarVisual*NORENORMLNORMLNORMBariumppmASTM D5185(m)<1346877BariumppmASTM D5185(m)0000MolybdenumppmASTM D5185(m)1111CalciumppmASTM D5185(m)1261534PhosphorusppmASTM D5185(m)3914164SulfurppmASTM D5185(m)391416  |                  |           | · /                 |           |             |             |             |
| White MetalscalarVisual*NONENONENONENONENONENONEYellow MetalscalarVisual*NONENONENONENONENONENONENONESiliconppmASTM D5185(m)>15<1420PotassiumppmASTM D5185(m)>20<1<100Water%ASTM D6304*>0.2<0.7700.1630ppm WaterppmASTM D6304*>2000<77061630.7SiltscalarVisual*NONEMODERNONE1630.7SiltscalarVisual*NONEMODERNONE1630.7DebrisscalarVisual*NONEMODERNONEVLITESand/DirtscalarVisual*NONEMODERNONENONEAppearancescalarVisual*NORMNORMLNORMLNORMOdorscalarVisual*NORNORMLNORMLNORMBariumppmASTM D5185(m)<442BariumppmASTM D5185(m)111ManganeseppmASTM D5185(m)111CalciumppmASTM D5185(m)121519PhosphorusppmASTM D5185(m)39141642SolurppmASTM D5185(m)391416   | Vanadium         |           | ( )                 |           |             |             | 0           |
| SiliconppmASTM D5185(m)>15<1   | White Metal      |           | . ,                 | NONE      | NONE        | NONE        | NONE        |
| Potassium ppm ASTM D5185(m) >20 <1   | Yellow Metal     | scalar    | Visual*             | NONE      | NONE        | NONE        | NONE        |
| Potassium ppm ASTM D5185(m) >20 <1   |                  |           |                     |           |             |             |             |
| Water % ASTM D6304* >0.2 ▲ 0.770  0.163   ppm Water ppm ASTM D6304* >2000 ▲ 7706  1630.7   Silt scalar Visual* NONE MODER NONE VLITE   Debris scalar Visual* NONE MONE NONE VLITE   Sand/Dirt scalar Visual* NONE LIGHT NONE NORE   Appearance scalar Visual* NORML NORML NORML NORML NORML   Odor scalar Visual* NORML NORML NORML NORML NORML   Emulsified Water scalar Visual* >0.2 ▲ 2% NEG .2%   Sodium ppm ASTM D5185(m) -  .4 .68 .77   Barium ppm ASTM D5185(m) I .4 .68 .77   Barium ppm ASTM D5185(m) I .4 .68   |                  |           |                     |           |             |             |             |
| ppm Water ppm ASTM D6304* >2000 ▲ 7706  1630.7   Silt scalar Visual* NONE MODER NONE VLITE   Debris scalar Visual* NONE NONE NONE NONE VLITE   Sand/Dirt scalar Visual* NONE NONE NONE NONE NONE   Appearance scalar Visual* NORM NORML NORML NORML NORML NORML NORM   Odor scalar Visual* NORML NORML NORML NORML NORML NORML NORML   Barium ppm ASTM D5185(m)  <1  |                  |           |                     |           |             |             | -           |
| SiltscalarVisual*NONEMODERNONEVIITEDebrisscalarVisual*NONENONENONEVLITESand/DirtscalarVisual*NONELIGHTNONENONEAppearancescalarVisual*NORMLNORMLNORMLNORMLNORMLOdorscalarVisual*NORMLNORMLNORMLNORMLNORMLNORMLEmulsified WaterscalarVisual*NORMNORMLNORMLNORMLNORMLBoronppmASTM D5185(m)-<  |                  |           |                     |           |             |             |             |
| DebrisscalarVisual*NONENONENONENONENONESand/DirtscalarVisual*NONELIGHTNONENORMAppearancescalarVisual*NORMNORMLNORMLNORMLNORMLOdorscalarVisual*NORMNORMLNORMLNORMLNORMLNORMLEmulsified WaterscalarVisual*>0.2▲ .2%NEG.2%.2%SodiumppmASTM D5185(m)41.2%BariumppmASTM D5185(m).0.0.0.0.0MolybdenumppmASTM D5185(m).00.0.0MagnesiumppmASTM D5185(m).111.1.0PhosphorusppmASTM D5185(m).1215.19.1PhosphorusppmASTM D5185(m).39.1414.1542.2ZincppmASTM D5185(m).39.1414.2<  | ••               |           |                     |           |             |             |             |
| Sand/DirtscalarVisual*NONELIGHTNONENONEAppearancescalarVisual*NORMLNORMLNORMLNORMLNORMLNORMLOdorscalarVisual*NORMLNORMLNORMLNORMLNORMLNORMLEmulsified WaterscalarVisual*>0.2▲ .2%NEG.2%.2%SodiumppmASTM D5185(m)<1<1.2%.2%BoronppmASTM D5185(m)Image and the state and |                  |           |                     |           | -           |             |             |
| AppearancescalarVisual*NORML  |                  |           |                     |           | -           |             |             |
| OdorscalarVisual*NORMLNORMLNORMLNORMLNORMLEmulsified WaterscalarVisual*>0.2 $\checkmark$ .2%NEG.2%SodiumppmASTM D5185(m)<1<1<1BoronppmASTM D5185(m)3468877BariumppmASTM D5185(m)0000MolybdenumppmASTM D5185(m)0<10ManganeseppmASTM D5185(m)2663MagnesiumppmASTM D5185(m)12111CalciumppmASTM D5185(m)121519PhosphorusppmASTM D5185(m)391416SulfurppmASTM D5185(m)391421332  |                  |           |                     |           |             |             |             |
| Emulsified Water scalar Visual* >0.2 ▲ .2% NEG .2%   Sodium ppm ASTM D5185(m) <1 <1 <1   Boron ppm ASTM D5185(m) 34 68 77   Barium ppm ASTM D5185(m) 0 0 0   Molybdenum ppm ASTM D5185(m) 0 <11 0   Manganese ppm ASTM D5185(m) 2 6 3   Magnesium ppm ASTM D5185(m) 11 1 1   Calcium ppm ASTM D5185(m) 12 15 19   Phosphorus ppm ASTM D5185(m) 615 1414 1542   Zinc ppm ASTM D5185(m) 39 14 16   Sulfur ppm ASTM D5185(m) 15137 19858 21332  |                  |           |                     |           |             |             |             |
| Sodium ppm ASTM D5185(m) <1 <1 <1 <1   Boron ppm ASTM D5185(m) 34 68 77   Barium ppm ASTM D5185(m) 0 0 0   Molybdenum ppm ASTM D5185(m) 0 <1   |                  |           |                     |           | -           |             |             |
| Boron ppm ASTM D5185(m) 34 68 77   Barium ppm ASTM D5185(m) 0 0 0   Molybdenum ppm ASTM D5185(m) 0   0 0 0   Malganese ppm ASTM D5185(m) 0   34 68 77   Magnesium ppm ASTM D5185(m) 0 0 <1   | Emulsified Water | scalar    | Visual <sup>^</sup> | >0.2      | <u> </u>    | NEG         | .2%         |
| Barium ppm ASTM D5185(m) 0 0 0   Molybdenum ppm ASTM D5185(m) 0 <1 0   Manganese ppm ASTM D5185(m) 2 6 3   Magnesium ppm ASTM D5185(m) 1 1 1   Calcium ppm ASTM D5185(m) 12 15 19   Phosphorus ppm ASTM D5185(m) 615 1414 1542   Zinc ppm ASTM D5185(m) 39 14 16   Sulfur ppm ASTM D5185(m) 15137 19858 21332  | Sodium           | ppm       | ASTM D5185(m)       |           | <1          | <1          | <1          |
| Molybdenum ppm ASTM D5185(m) 0 <1  | Boron            | ppm       | ASTM D5185(m)       |           | 34          | 68          | 77          |
| Manganese ppm ASTM D5185(m) 2 6 3   Magnesium ppm ASTM D5185(m) 1 1 1   Calcium ppm ASTM D5185(m) 12 15 19   Phosphorus ppm ASTM D5185(m) 615 1414 1542   Zinc ppm ASTM D5185(m) 39 14 16   Sulfur ppm ASTM D5185(m) 15137 19858 21332   | Barium           | ppm       | ASTM D5185(m)       |           | 0           | 0           | 0           |
| Magnesium ppm ASTM D5185(m) 1 1 1   Calcium ppm ASTM D5185(m) 12 15 19   Phosphorus ppm ASTM D5185(m) 615 1414 1542   Zinc ppm ASTM D5185(m) 39 14 16   Sulfur ppm ASTM D5185(m) 15137 19858 21332   | Molybdenum       | ppm       | ASTM D5185(m)       |           | 0           | <1          | 0           |
| Calcium ppm ASTM D5185(m) 12 15 19   Phosphorus ppm ASTM D5185(m) 615 1414 1542   Zinc ppm ASTM D5185(m) 39 14 16   Sulfur ppm ASTM D5185(m) 15137 19858 21332   | Manganese        | ppm       | ASTM D5185(m)       |           |             |             |             |
| Phosphorus ppm ASTM D5185(m) 615 1414 1542   Zinc ppm ASTM D5185(m) 39 14 16   Sulfur ppm ASTM D5185(m) 15137 19858 21332  | Magnesium        | ppm       | ASTM D5185(m)       |           |             |             |             |
| Zinc ppm ASTM D5185(m) 39 14 16   Sulfur ppm ASTM D5185(m) 15137 19858 21332   | Calcium          | ppm       | ASTM D5185(m)       |           | 12          | 15          | 19          |
| Sulfur ppm ASTM D5185(m) 15137 19858 21332   | Phosphorus       | ppm       | ASTM D5185(m)       |           | 615         | 1414        | 1542        |
|  | Zinc             | ppm       | ASTM D5185(m)       |           | 39          | 14          | 16          |
| Visc @ 40°C cSt ASTM D7279(m) 95 95.8 96.8   | Sulfur           | ppm       | ASTM D5185(m)       |           | 15137       | 19858       | 21332       |
|  | Visc @ 40°C      | cSt       | ASTM D7279(m)       | 95        | 95.3        | 95.8        | 96.8        |

Contact/Location: John Anderson - ABCBUR





Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 CALA Sample No. Received : 27 Mar 2024 : LH0281215 Lab Number : 02625024 Tested : 28 Mar 2024 ISO 17025:2017 Unique Number : 5750143 Accredited : 28 Mar 2024 - Kevin Marson Diagnosed Laboratory Test Package : MOB 1 (Additional Tests: KF) To discuss this sample report, contact Customer Service at 1-800-268-2131. Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

Ba

Ab 60

> Dec13/16 Un6/17

80

/av16/19 Jan 11/21

Jan 11/21

an11/0.

Jan11/21.

Jul14/21

Jul23/18

Vov28/17

Aav16/19

ABC RECYCLING 8081 MEADOW AVE. BURNABY, BC CA V3N 2V9 Contact: John Anderson john.anderson@abcrecycling.com T: (778)988-9944 F:

Contact/Location: John Anderson - ABCBUR